UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,633	09/22/2003	Christopher Cave	I-2-0390.1US	1103

24374 7590 06/28/2006

VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
LAM, DUNG LE	
ART UNIT	**PAPER NUMBER**
2617	

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/667,633	CAVE ET AL.	
	Examiner	Art Unit	
	Dung Lam	2617	

-- The MAILING DATE of this communication appears on the cover sh et with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *45-88* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *45-88* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ___.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 47.73(b).

2. Claim 45-58, 59-73, 74-82, 83-88 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the corresponding claims 1-22, 23-34, 35-47,48-54 of Application No. 10/626165 (U.S. Publication No. 2005/0014533). Although the conflicting claims are not identical, they are not patentably distinct from each other because the pending claims are broader than the copending claims, the pending claim encompasses all the limitations of the claimed limitations from the copending application No. 10/626165.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 45, 56-58, 67-69, 73, 84, 85 and 87** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Anderson et al.** (US Patent No. 6088590) in view of **Farwell** (US Patent No. 5396541).

3. Regarding **claim 45**, Anderson teaches a radio network having a plurality of base stations, each providing wireless communication services for mobile units in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations, and an interface (BSC 105, Fig. 1c) connected to the base stations (BS 104, 405, 410, Fig. 1C) method of handoff a wireless communication with a mobile unit conducted via a first base station to a second base station comprising: detecting a handover trigger event during the mobile unit's wireless communication via the first base station (Col . 45 Ln 30-38, Col. 15, lines 53-55); transmitting an omnidirectional (omnidirectional pattern, Col. 12 Ln 12-15) sounding pulse (broadly interpreted as control pulse, Col. 9 Ln 15-30; Col. 9 Ln 34-40) from the mobile unit; communicating information related to the detected sounding pulse to the interface by each base station detecting the sounding pulse (Col. 9 Ln 27-34); Anderson further teaches a handoff method and suggests the idea of applying the method of handoff using the pulse signal (Col 10 Ln 46-49, Col. 15 and 16); However, **Anderson** does not specifically teach the step of selecting the second base station from the base stations that detected the sounding pulse based on the communicated information; and continuing the mobile unit's wireless communication via the selected second base station. In an analogous art, **Farw ll** teaches a handover method which allows the interface to select the base station with the highest signal strength, the method comprising the steps of: detecting a

handover trigger (C3 Ln 36-42), transmitting a signal by the mobile station (C3 Ln 45-54), communicating the detected signal back to the system by the base station (C3 L56-64) and selecting the second base station which has the highest signal strength (C3 L65 – C4 L5). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Anderson's method of handover using omnidirectional pulse to properly adjust the power levels in combination with **Farwell**'s teaching of allowing the network to select the second base station. This combination would result in minimized interference with neighbor cells due to proper power control from the pulse and longer battery life for the mobile unit since monitoring of the signal strength is performed at the network side.

4. Regarding **claim 56**, **Anderson, Farwell and Budwik** teach all the limitations of the method of claim **45**. However, they fail to teach that the mobile unit is equipped with a global positioning system (GPS) and the transmitting of an omnidirectional sounding pulse includes transmitting of mobile unit location information associated with the sounding pulse transmitted by the mobile unit and/or includes transmitting of identification information associated with the sounding pulse transmitted the mobile unit. Nonetheless, it is well known in the art that mobile unit is equipped with GPS in facilitating the mobile positioning process. Therefore it would have been obvious for one of ordinary skill in the art at the time of the invention to add the GPS in the mobile to speed up the location positioning of the handset.

5. Regarding claim 57, **Anderson, Farwell and Budwik** teach all the limitations of the method of claim **45**. They fail to explicitly teach that the transmitting of an omnidirectional sounding pulse includes transmitting a subsequent sounding pulse of increased power by the mobile unit if handover does not occur within a predefined time period from its transmitting of an

omnidirectional sounding pulse. However, Anderson teaches a method of adjusting the power to a higher or lower level if the mobile is far or close from the base stations respectively (Col. 9, lines 50-15). In addition, it is also well known in the field of communications that after a failed transmission, one of ordinary skill in the art may use back-off algorithm to resend the signal in a predefined period of time. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify **Anderson, Farwell and Budwik**'s teaching of a handoff method to retransmit the signal with increasing power (if the mobile is far away from the base station) at a predefined period to increase the chance of a successful handoff.

6. Regarding claim **58**, **Anderson, Farwell and Budwik** teach all the limitations of the method of claim **45**. They fail to expressly teach that the transmitting of an omnidirectional sounding pulse includes transmitting a series of omnidirectional sounding pulses of increasing power from the mobile unit. However, Anderson teaches a method of adjusting the power to a higher or lower level if the mobile is far or close from the base stations respectively (Col. 9, lines 50-15). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify **Anderson and Farwell** 's teaching of a handoff method to retransmit the signal with increasing power (assuming the mobile is far away from the base station) to increase the chance of a successful handoff.

7. Regarding claim 67, **Anderson and Farwell** teach all the limitations of the method of claim **45**. They fail to explicitly teach the mobile units are each configured to monitor the power level of a directed communication beam from a base station that is received by the mobile unit and to transmit an omnidirectional sounding pulse if the monitored power level falls below a predefined level. However, Anderson teaches that the base station sends a message to inform the user station to adjust its power if needed to reduce interference (Col. 9, lines 35-46).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify **Anderson and Farwell**'s teaching of a handoff method to be capable of adjusting power to an appropriate level to reduce interference.

8. Regarding claim **68**, it is an apparatus claim corresponding to the method claim number 13 previously addressed. Therefore, it is rejected for the same reasons as in claim 57.

9. Regarding claim **69**, it is an apparatus claim corresponding to the method claim number 56 previously addressed. Therefore, it is rejected for the same reasons as in claim 56.

10. Regarding claim **73**, it is an apparatus claim corresponding to the method claim number 57 previously addressed. Therefore, it is rejected for the same reasons as in claim 57.

11. Regarding claim **84,** it claims a mobile unit, which corresponds to the method claim 57. Therefore, it is rejected for the same reasons as claim 57.

12. Regarding claim **85**, it claims a mobile unit, which corresponds to the method claim 56 previously addressed. Therefore, it is rejected for the same reasons as in previous claim 56.

13. Regarding claim **87,** it claims a mobile unit, which corresponds to the method claim 57 previously addressed. Therefore, it is rejected for the same reasons as in previous claim 57.

14. **Claims 59, 66, 71-72, 83 and 86** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Anderson et al.** (US Patent No. 6088590) in view of **Farwell** (US Patent No. 5396541) in view of **Budnik** (US Patent No. 6052064).

15. Regarding claim **59**, Anderson teaches a communication network for wireless communication with mobile units comprising: a plurality of base stations (BS 104, 405, 410, Fig. 1C), each providing wireless communication services in a geographic

coverage area that may or may not overlap with the geographic coverage areas of other of the base stations; at least one base station interface (BSC 105, Fig. 1c) connected to the base stations such that each base station has a controlling interface associated with its base station to mobile unit wireless communications; each base station configured to detect sounding pulses (broadly interpreted as control pulse, Col. 9 Ln 15-30; Col. 34-40) emitted from mobile units in order to establish wireless communication with such mobile units; each base station configured to communicate information (Col. 9 Ln 27-34) related to a detected sounding pulse from a mobile unit to a selected interface;

However, Anderson does not explicitly teach that the interface/BSC is configured to select the handover base station based on the detected sounding pulse signal. In an analogous art, **Farwell** teaches that each interface when acting as a controlling interface for a serving base station where a communication of a communicating mobile unit is conducted via the serving base station, configured to select a handover base station for continuing the wireless communication of the communicating mobile unit based on information communicated from each base station that detected a sounding pulse emitted from the communicating mobile unit during the communication with the serving base station (it is broadly interpreted to be the same as "the System controller and switch 101 selects the base station that receives the strongest signal among the base stations that can detect signals from the mobile station, Col. 3 L37-45, C3 L65 – C4 L16); and each base station configured to continue the communicating mobile unit's wireless communication when selected as the handover base station for a communicating with the mobile unit (C4 L6-29). Therefore, it would have been obvious

for one of ordinary skill in the art at the time of the invention to combine Anderson's method of handover using omnidirectional pulse to properly adjust the power levels in combination with **Farwell**'s teaching of selecting the second base station by the network side. This combination would result in minimized interference with neighbor cells due to proper power control from the pulse and longer battery life for the mobile unit since monitoring of the signal strength is performed at the network side. The combination of **Anderson and Farwell** do not expressly teach the step of directing the selected handover base station to direct its communication beam to continue the communicating mobile unit's wireless communication via the handover base station. In an analogous art, **Budnik** teaches the concept of directing the beamforming antenna in the direction of the mobile unit (Col. 9 Ln 35-50). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Anderson and Farwell's teaching of the handover method to direct the base station's beam toward the mobile to establish a communication link to ensure optimal signal strength and minimum interference.

16. Regarding claim 71, it is a communication network which has the same corresponding limitations as claims 45 and 59, therefore it is rejected for the same reasons as claims 45 and 59.

17. Regarding claim 83, **Anderson, Farwell and Budwik** teach a mobile unit that has the corresponding limitations of claim 45 and 59. Therefore it is rejected for the same reasons as claim 1 and 59. **Anderson, Farwell and Budwik**'s combined teaching discloses that the mobile unit has an inherent transmitter configured to transmit

an omnidirectional (Col. 12 Ln 12-15) sounding pulse (broadly interpreted as control pulse, Col. 9 Ln 15-30; Col. 9 Ln 34-40) and an inherent receiver configured to receive communication beams from base stations; and an inherent processor configured to select a handover base station (Col. 16 Ln 50-25) via which the mobile unit is to continue the wireless communication based on communication beams received by the mobile unit from base stations that detected the pulse transmitted by the mobile unit (see claims 45 and 59 above).

18. Regarding claim **66**, it is a subset of claim 59 which is an apparatus claim corresponding to the method claim number **45**. Therefore, it is rejected for the same subset of reasons as in claim **45**.

19. Regarding claim **71,** it is a subset of limitations of claim 59. Therefore, claim 71 is rejected for the same subset of reasons as claim 59.

20. Regarding claim **72,** it is a subset of limitations of claim 59. Therefore, claim 72 is rejected for the same subset of reasons as claim 59.

21. Regarding claim **86**, **Anderson, Farwell and Budwik** teach all the limitations of the method of claim 83. Anderson further teaches that the mobile unit is configured to transmit an omnidirectional sounding pulse that includes mobile unit identification information (the mobile responds to a poll message with its identification, Col. 12, lines 52-58).

22. Claim **46, 47, 53-55, 60-61, 64-65, 70, 74, 75 and 88** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Anderson et al.** (US Patent No. 6088590) in view of **Farwell** (US Patent No. 5396541) further in view of **Keskitalo** (US Patent No. 5893033).

23. Regarding **claim 46, Anderson and Farwell** teach all the limitations of the method of claim **45**. However, they fail to teach that each base station has a selectively operable beamforming antenna that can determine the location of the mobile and steer the channels toward the mobile's location. In an analogous art, Keskitalo teaches that each base station has a selectively operable beamforming antenna, and further comprising: determining a relative location of the mobile unit with respect to the beamforming antennas of base stations neighboring the first base station (Col. 9, lines 41-45) and directing beacon channels of the neighboring base stations toward the mobile unit location to receive the transmitted sounding pulse (Col. 9, lines 63-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to include the step of determining the mobile's location and direct the channels toward the mobile's location to have a better signal quality.

24. Regarding **claim 47**, **Anderson and Farwell** teach all the limitations of the method of claim **45**. However, they fail to teach that each base station has a selectively operable beamforming antenna that can determine the location of the mobile and sweep beacon channels over an arc. In an analogous art, Keskitalo teaches a step of determining a relative location of the mobile unit with respect to the beamforming antennas of base stations neighboring the first base station (Col. 9, lines 41-45) and commanding the neighboring base stations to sweep beacon channels over an arc encompassing the mobile unit location to

receive the transmitted sounding pulse (Col. 9, lines 48-49 and Col. 9, lines 63-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to include the step of determining the mobile's location and sweep the channels over an arc to search for the best signal components as taught by **Keskitalo** (Col. 9, 14-16).

25. Regarding claim **53**, it is a combination of claims 45 and 47. Therefore, it is rejected for the same reasons as claims 45 and 47.

26. Regarding claim **54**, Anderson, Farwell and Keskitalo teaches all the limitations as in claim 53. However, they fail to teach that Node B is configured to operate its antenna to form a communication beam that carries common channels that encompasses the relative location of a plurality of UEs so that the formed beam provides common channel service to a plurality of UEs. Nonetheless, it is a practical design system to service a plurality of UEs rather than a single one to increase capacity of the system. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to service multiple UEs to maximize system capacity.

27. Regarding claim **55**, **Anderson and Farwell** teach all the limitations of the method of claim **45**. However, they fail to teach that the mobile unit has a selectively operable beamforming antenna and transmitting an omnidirectional sounding pulse from the mobile unit is performed by transmitting multiple sounding pulses that sweep through 360 degrees or a set of calculated arcs. In an analogous art, **Keskitalo** teaches that a sweep of an antenna beam over a given area (Col. 9, lines 48-49). Therefore, it would have been obvious to one of

ordinary skill in the art at the time of the invention to modify the handover method to include the step of determining the mobile's location and sweep the channels over an arc to search for the best signal components as taught by Keskitalo (Col. 9, 14-16).

28. Regarding **claims 60 and 61**, they are apparatus claims corresponding to the method claims number 45 and 47 respectively. Therefore, they are rejected for the same reasons as claim 45 and 47.

29. Regarding claim **64**, Anderson, Farwell and Keskitalo teaches all the limitations as in claim 63. However, they fail to teach that Node B is configured to operate its antenna to form a communication beam that carries common channels that encompasses the relative location of a plurality of UEs so that the formed beam provides common channel service to a plurality of UEs. Nonetheless, it is a practical design system to service a plurality of UEs rather than a single one to increase capacity of the system. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to service multiple UEs to maximize system capacity.

30. Regarding **claim 65**, it is an apparatus claim corresponding to the method claim number 45. Therefore, it is rejected for the same reasons as claim 45.

31. Regarding claim **70**, it is an apparatus claim corresponding to the method claim number 55. Therefore, it is rejected for the same reasons as claim 55.

32. Regarding claim 74, it is an apparatus claim corresponding to the combined method claims number 45 and 46. Therefore, it is rejected for the same set of reasons as claim 45 and 46.

33. Regarding claim 75, it is an apparatus claim corresponding to another variation of the combined method claims 45 and 46. Therefore, it is rejected for the same set of reasons as claim 45 and 46.

34. Regarding claim 88 it claims a mobile unit, which corresponds to the method claim 55 previously addressed. Therefore, it is rejected for the same reasons as claim 55.

35. Claim **48, 62** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Anderson et al.** (US Patent No. 6088590) in view of **Farwell** (US Patent No. 5396541) further in view of **Bark et al.** (US Patent No. 6445917).

36. Regarding **claim 48**, **Anderson and Farwell** teach all the limitations of the method of claim **45**. However, they fail to teach that the radio network is a UMTS Terrestrial Radio Access Network (UTRAN), each base station is a Node B, the interface is a Radio Network Controller (RNC) and the mobile unit is a mobile User Equipment (UE); In an analogous art, **Bark** teaches a UMTS Terrestrial Radio Access Network (UTRAN) (**24**, see Figure 1A), each base station is a Node B (**28**), the interface is a Radio Network Controller (RNC) **26** and the mobile unit is a mobile User Equipment (3G terminology); the communicating information is between Node Bs and the RNC via an Iub or combination Iub/Iur interface (Col. 5, lines 44-45, and 3G standards); the second base station selection is performed by the RNC by selecting a second Node B (col. 8, lines 50-55); and the UE's communication continued via the second Node B is via a Uu interface (inherent).

UMTS is a system used in the 3G which is gaining increasing popularity. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to also establish this handover method in the UMTS system to keep the network system up-to-date with the current technology.

37. Regarding claim **62,** it is an apparatus claim corresponding to the method claim number 48. Therefore, it is rejected for the same reasons as claim 48.

38. Claims **49, 50, 63, 76, 78-82** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Anderson et al.** (US Patent No. 6088590), **Farwell** (US Patent No. 6088590) and **Bark et al.** (US Patent No. 6445917) further in view of **Keskitalo** (US Patent No. 5893033).

39. Regarding **claim 49**, **Anderson, Farwell and Bark** teach all the limitations of the method of claim 48. However, they fail to teach that each Node B has a selectively operable beamforming antenna, further comprising: determining a relative location of the UE unit with respect to the beamforming antennas of Node Bs neighboring the first Node B and directing beacon channels of the neighboring Node Bs toward the UE location to receive the transmitted sounding pulse. In an analogous art, **Keskitalo** teaches a step of determining a relative location of the UE unit with respect to the beamforming antennas of Node Bs neighboring the first Node B and directing beacon channels of the neighboring Node Bs toward the UE location to receive the transmitted sounding pulse (Col. 9, lines 63-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to include the step of determining the mobile's location and direct the channels toward the mobile's location to have a better signal quality.

40. Regarding claim **50, Anderson, Farwell and Bark** teach all the limitations of the method of claim 48. However, they fail to teach that each Node B has a selectively operable beamforming antenna, further comprising: determining a relative location of the UE unit with respect to the beamforming antennas of Node Bs neighboring the first Node B and commanding the neighboring Node Bs to sweep beacon channels over an arc encompassing the mobile unit location to receive the transmitted sounding pulse. In an analogous art, **Keskitalo** teaches a that each Node B has a selectively operable beamforming antenna, further comprising: determining a relative location of the UE unit with respect to the beamforming antennas of Node Bs neighboring the first Node B and commanding the neighboring Node Bs to sweep beacon channels over an arc encompassing the mobile unit location to receive the transmitted sounding pulse (Col. 9, lines 48-49 and Col. 9, lines 63-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to sweep the channels over an arc to search for the best signal components (Keskitalo, Col. 9, lines 14-16) in the 3G environment to make the network more interface-able with other networks.

41. Regarding claim 63, it is an apparatus claim corresponding to the method claim number 49. Therefore, it is rejected for the same reasons as claim 49.

42. Regarding claim 76, it is a combination of method claims 45, 46, and 48. Therefore, it is rejected for the same set of reasons as claim 45, 46 and 48.

43. Regarding claim 78 and 5, it is a combination of method claims 45 and 46. Therefore, it is rejected for the same set of reasons as claim 45 and 46 (See claims 45 and 46).

44. Regarding claim 80, 81 and 82, they are method claims that correspond to previous method claims of 55-57. Therefore, they are rejected for the same of reasons as claim 55-57.

45. Claim **51-52, 77** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Anderson et al.** (US Patent No. 6088590) in view of **Farwell** (US Patent No. 5396541) further in view of **Bark et al.** (US Patent No. 6,445,917) further in view of **Velazquez et al.** (US Patent No. 6,593,880).

46. Regarding **claim 51**, **Anderson and Farwell** teach all the limitations of the method of claim **48**. However, the combination fails to specifically teach the step of determining a relative location of the UE and directs the beam toward the UE to encompass the UE's relative location. In an analogous art, **Velazquez** teaches a step of determining a relative location of the UE with respect to the beamforming antenna of the selected second Node B based on information related to the detected sounding pulse whereby the continuing of the UE's communication via the second Node B includes operating the selected Node B's antenna to form a communication beam for at least one dedicated channel covering a selected portion of the coverage area serviced by the second Node B that encompasses the determined relative location of the UE (Col. 7, ln 25-68, Col. 8, ln 25-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply Anderson and Bark's teaching of the handover method in the UMTS system and Velazquez's teaching of locating the UE and directing the beam toward the UE to reduce the system's interference.

47. Regarding **claim 52**, **Anderson and Farwell** teach all method of claim 48. The combination also fails to specifically teach that the UE has a selectively beamforming antenna and the step of determining a relative location of Node B and directs the beam toward the Node B to form a communication beam. In analogous art, **Velazquez** teaches that the UE has a selectively beamforming antenna (col. 5, ln 25-28) and the step of determining a relative location of the second Node B (col. 7 ln. 55-60) with respect to the beamforming antenna of the mobile unit based on information related to the detected sounding pulse whereby the continuing of the UE's communication via the second Node B includes operating the mobile unit's antenna to form a communication beam toward the second Node B (Col. 6, ln. 65 - Col. 7 ln 15, Col. 8, ln 25-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply Anderson and Bark's teaching of the handover method in the UMTS system and Velazquez's teaching of locating the UE and directing the beam toward the desired base station to reduce the system's interference as suggested by Velazquez (see Col. 5 ln. 65- col. 7 ln. 5).

48. Regarding claim **77, Anderson, Farwell and Bark** teach all the limitations of a network of claim 76. However, The combination also fails to specifically teach the step of determining a relative location of the UE and directs the beam toward the UE to encompass the UE's relative location. In an analogous art, Velazquez teaches a determining a relative location of the UE with respect to the beamforming antenna of each sounding pulse detecting Node B based on information related to the detected

sounding pulse whereby the directing of a communication beam includes operating the respective Node Bs' antennas to form communication beams that each cover a selected portion of the coverage area serviced by the respective Node B that encompasses the relative location of the UE (Col. 7, ln 25-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply Anderson and Bark's teaching of the handover method in the UMTS system and Velazquez's teaching of locating the UE and directing the beam toward the UE to reduce the system's interference.

49. Claims **45 and 74,** rejected under 35 U.S.C. 103(a) as being unpatentable over **Budnik** (US Pat. No. 6052064) in view of **Anderson et al.** (US Patent No. 6088590)

50. Regarding claim **45**, **Budnik** teaches a radio network having a plurality of base stations (base transmitters and receivers, C3 Ln 12-35), each providing wireless communication services in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations, and an interface (a controller that controls the base transmitters, column 3, lines 12-35) connected to the base stations, a method for establishing wireless communication comprising: transmitting a sounding pulse from a wireless mobile unit located in a geographic coverage area of at least one of the base stations (The RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests, column 3, lines 60-67); communicating information related to the detected

sounding pulse to the interface by each base station detecting the sounding pulse (A location estimate is determined by the controller in cooperation with the base receivers using well-known techniques, such as comparing RSSI levels of a plurality of base receivers during receipt of the inbound message; column 5, lines 3-19); selecting one of the base stations that detected the sounding pulse for mobile unit communication based on the communicated information (the base transmitters each decide independently whether to transmit the outbound message to the subscriber unit; col. 9, lines 8-15); and continuing a communication beam from the selected base station to the mobile unit to establish wireless communication (Finally, a beam forming antenna may be aimed in the direction of the portable subscriber unit; column 9, lines 44-50). **Budnik** fails to disclose that the sounding pulse from the mobile unit is omnidirectional and a detection of a trigger of a detection of a handover trigger event during the mobile unit's wireless communication. In an analogous art, **Anderson** teaches a user station uses omnidirectional antenna (Col. 1, ln 27-37) and handoff procedure is initiated/triggered when the received signal level at a user station falls below an acceptable level. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify the combination of Budnik with Anderson such that the subscriber units broadcast omnidirectionally in order to avoid the need to point a mobile in a particular direction for reception and a handover process is triggered/detected when the signal strength falls below certain threshold to maintain a maximum quality of service.

51. Regarding claim **74**, it claims that it has the same limitations as 45. Therefore, they are rejected for the same reasons as claim 45.

52. Claims **59 and 84** rejected under 35 U.S.C. 103(a) as being unpatentable over **Budnik** (US Pat. No. 6052064) in view of **Scherzer** (US Pat. No. 6347234) further in view of **Menich et al.** (US Patent No. 5,327,575).

53. Regarding claim **59**, **Budnik** teaches a radio network having a plurality of base stations (base transmitters and receivers, C3 Ln 12-35), each providing wireless communication services in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations, a method for establishing wireless communication comprising: transmitting a sounding pulse from a wireless mobile unit located in a geographic coverage area of at least one of the base stations (The RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests, column 3, lines 60-67); directing a communication beam from base stations to the mobile unit to establish wireless communication (a beam forming antenna may be aimed in the direction of the portable subscriber unit; column 9, lines 44-50); **Budnik** fails to disclose that the sounding pulse from the mobile unit is omnidirectional. In an analogous art, **Scherez** teaches that in conventional wireless communication system, information is transmitted from the subscribers base to the base staion by broadcasting omnidirectionally (Col. 1, ln 27-37). It would have been obvious for one of ordinary skill in the art at the time of the invention

to modify the combination of Budnik with Scherzer such that the subscriber units broadcast omnidirectionally in order to avoid the need to point a mobile in a particular direction for reception. The combination of Budnik and Scherzer fails to disclose that a base station is selected based on the detected sounding pulse based on the communication beams received by the mobile unit; In a similar field of endeavor, **Menich** discloses a sytem where upon activation, an MS scans a pre-programmed spectrum in search of CCCH identification signals transmitted from nearby BTSs, measures a signal quality factor such as signal strength, and selects the BTS providing the largest relative signal strength (C1, Ln 47-56). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify the combination of Budnik and Scherzer with Menich to include the selecting of a base station at the at the mobile station in order to reduce the possibility of handover to a nearby BTS that has low signal strength due to a propagation impediment.

54. Regarding claim **84**, **Budnik** teaches a mobile unit for use in a radio network having a plurality of base stations , each base station providing wireless communication services in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations (base transmitters and receivers, C3 Ln 12-35), the mobile unit comprising: a transmitter configured to transmit a sounding pulse (The RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests, column 3, lines 60-67); a receiver for receiving communication beams from base stations that detected a sounding pulse

transmitted by the mobile unit (a beam forming antenna may be aimed in the direction of the portable subscriber unit; column 9, lines 44-50); and a processor configured to select a base station with which to establishing a wireless communication based on communication beams received by the mobile unit from base stations that detected a sounding pulse transmitted by the mobile unit. **Budnik** fails to disclose that the sounding pulse from the mobile unit is omnidirectional. In an analogous art, **Scherez** teaches that in conventional wireless communication system, information is transmitted from the subscribers base to the base staion by broadcasting omnidirectionally (Col. 1, ln 27-37). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify the combination of Budnik with Scherzer such that the subscriber units broadcast omnidirectionally in order to avoid the need to point a mobile in a particular direction for reception. The combination of Budnik and Scherzer fails to disclose that a base station is selected based on the detected sounding pulse based on the communication beams received by the mobile unit; In a similar field of endeavor, **Menich** discloses a sytem where upon activation, an MS scans a pre-programmed spectrum in search of CCCH identification signals transmitted from nearby BTSs, measures a signal quality factor such as signal strength, and selects the BTS providing the largest relative signal strength (C1, Ln 47-56), which reads on the claimed "processor configured to select a base station with which to establishing a wireless communication based on communication beams received by the mobile unit". Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify the combination of Budnik and Scherzer with Menich to include

the selecting of a base station at the at the mobile station in order to reduce the possibility of handover to a nearby BTS that has low signal strength due to a propagation impediment.

55. Claims **71** rejected under 35 U.S.C. 103(a) as being unpatentable over **Budnik** (US Pat. No. 6052064) in view of **Anderson et al.** (US Patent No. 6088590).

56. Regarding **claim 71, Budnik** teaches a communication network for wireless communication with mobile units comprising: a plurality of base stations (a plurality of base transmitters and receivers and a plurality of portable subscriber units; Col. 3, lines 12-35), each providing wireless communication services in a geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations; at least one base station interface connected to the base stations (a controller that controls the base transmitters, column 3, lines 12-35); each base station configured to detect sounding pulses emitted from mobile units in order to establishment wireless communication with such mobile units (The RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests, column 3, lines 60-67); each base station configured to communicating information related to a detected sounding pulse from a mobile unit to a selected interface (A location estimate is determined by the controller in cooperation with the base receivers using well-known techniques, such as comparing RSSI levels of a plurality of base receivers during receipt of the inbound message; column 5, lines 3-19); select a base station for wireless communication with a mobile unit that transmitted a sounding pulse

based on the information communicated from each base station that detected the sounding pulse emitted from that mobile units (the base transmitters each decide independently whether to transmit the outbound message to the subscriber unit; col. 9, lines 8-15); and each base station configured to direct a communication beam when selected to a respective mobile unit to establish wireless communication (Finally, a beam forming antenna may be aimed in the direction of the portable subscriber unit; column 9, lines 44-50). **Budnik** fails to disclose that the sounding pulse from the mobile unit is omnidirectional and a upon the detection of a handover is triggered a handover base station is selected based on the received signal. In an analogous art, **Anderson** teaches a user station uses omnidirectional antenna (Col. 1, ln 27-37) and handoff procedure is initiated/triggered when the received signal level at a user station falls below an acceptable level (C15 L53-55, C16 L6-33). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify the combination of Budnik with Anderson such that the subscriber units broadcast omnidirectionally in order to avoid the need to point a mobile in a particular direction for reception and a new base station is selected when the received signal strength falls below certain threshold to maintain a maximum quality of service.

Response to Arguments

Applicant's arguments with respect to claims 45-88 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Lam whose telephone number is (571) 272-6497. The examiner can normally be reached on M - F 9 - 50 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is (571) 272-6497.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DL

LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER